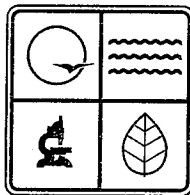


STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI AIR CONSERVATION COMMISSION



PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **032006 - 010**

Project Number: **2005-10-044**

Owner: **Mid-America Biofuels, LLC**

Owner's Address: **P.O. Box 104778, Emerald Lane, Jefferson City, MO 65110**

Installation Name: **Mid-America Biofuels, LLC**

Installation Address: **410 South Jefferson, Mexico, MO 65265**

Location Information: **Audrain County, S28, T51N, R9W**

Application for Authority to Construct was made for:

Installation of a biodiesel production facility. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

☐ Standard Conditions (on reverse) are applicable to this permit.

☒ Standard Conditions (on reverse) and Special Conditions (listed as attachments starting on page 2) are applicable to this permit.

MAR 13 2006

EFFECTIVE DATE

Steven F. J. L. K.

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

for J L K

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional Office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed Special Conditions as provided in RSMo 643.075. If you choose to appeal, the Air Pollution Control Program must receive your written declaration within 30 days of receipt of this permit.

If you choose not to appeal, this certificate, the project review, your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Department of Natural Resources has established the Outreach and Assistance Center to help in completing future applications or fielding complaints about the permitting process. You are invited to contact them at 1-800-361-4827 or (573) 526-6627, or in writing addressed to Outreach and Assistance Center, P.O. Box 176, Jefferson City, MO 65102-0176.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention Construction Permit Unit.

Page No.	2
Permit No.	
Project No.	2005-10-044

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Mid-America Biofuels, LLC
Audrain County, S28, T51N, R9W

1. Performance Testing

- A. Mid-America Biofuels, LLC shall conduct performance tests to verify that the emission rates from the Boiler (EP01) while combusting vegetable oil and biodiesel do not exceed those stated in the application as listed below:

Pollutant	Emission Rate (pound per MMBTU)
PM ₁₀	0.05
NOx*	0.1776
CO**	0.0064

*Nitrogen Oxides

**Carbon Monoxide

- B. Mid-America Biofuels, LLC shall demonstrate initial compliance with 40 CFR Part 63, Subpart DDDDD, for the Boiler (EP01) by either conducting initial performance tests according to 40 CFR §63.7520, 40 CFR §63.7530(c), and Table 5 to Subpart DDDDD or conducting initial fuel analysis according to 40 CFR §63.7521, 40 CFR §63.7530(d), and Table 6 to Subpart DDDDD.
- C. These tests shall be performed within sixty (60) days after achieving the maximum production rate of the installation, but not later than 180 days after initial start-up of operation and shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition Number 2.

2. Proposed Test Plan

- A. A completed Proposed Test Plan Form (enclosed) must be submitted to the APCP thirty (30) days prior to the proposed test date so that the APCP may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.

Page No.	3
Permit No.	
Project No.	2005-10-044

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- B. Two (2) copies of a written report of the performance test results shall be submitted to the Director within thirty (30) days of completion of any required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one (1) sample run.
 - C. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.
 - D. If the performance testing required by Special Condition 1 of this permit indicate that any of the emission rates specified in the application are being exceeded, Mid-America Biofuels, LLC must propose a plan to the APCP within thirty (30) days of submitting the performance test results. This plan must demonstrate how total emissions from the Mid-America Biofuels, LLC biodiesel plant will remain below de minimis levels as outlined in Table 3. Alternatively, Mid-America Biofuels, LLC may undergo a Section (8) review of this project. Mid-America Biofuels, LLC shall implement any such plan immediately upon its approval by the Director.
3. Baghouse conditions
- A. Mid-America Biofuels, LLC shall control emissions from the Filter Aid (EP03) using baghouses as specified in the permit application. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the DNR employees may easily observe them. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - B. Mid-America Biofuels, LLC shall monitor and record the operating pressure drop across the baghouses and drum filters at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - C. Mid-America Biofuels, LLC shall maintain an operating and maintenance log for the baghouses and drum filters which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and

Page No.	4
Permit No.	
Project No.	2005-10-044

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
4. Cooling Tower Operating Requirements
 - A. The cooling tower(s) shall be operated and maintained in accordance with the manufacturer's specifications. Manufacturer's specifications shall be kept on site and made readily available to Department of Natural Resources' employees.
 - B. The cooling water circulation rate shall not exceed 360,000 gallons per hour.
 - C. Mid-America Biofuels, LLC shall keep records of the monthly and 12-month rolling averages of the amount of water circulated.
 - D. The drift loss from the towers shall not exceed 0.002 percent of the water circulation rate. Verification of drift loss shall be by manufacturer's guaranteed drift loss and shall be kept on site and made readily available to Department of Natural Resources' employees upon request.
 - E. The total dissolved solids (TDS) concentration in the circulated cooling water shall not exceed a TDS concentration of 3,500 parts per million (ppm). A TDS sample shall be collected and the results recorded monthly to verify the TDS concentration.
 - F. The requirement for TDS sample collection may be eliminated or the frequency may be reduced upon written approval by the Air Pollution Control Program if TDS sampling results demonstrate compliance for 24 consecutive months.
 5. Fuel Oil Sulfur Content Restriction

The sulfur content of the fuel to be used in the Boiler (EP01) shall not exceed 0.05% by weight. Mid-America Biofuels, LLC shall obtain the sulfur content of the fuel oil for each fuel oil delivery from the fuel vendors or conduct their own fuel analysis to evaluate the typical sulfur content weight percent of the fuel oil. The fuel consumption records and statement shall be kept on-site for five (5) years and shall be made immediately available to the Missouri Department of Natural Resources' personnel upon request.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2005-10-044
Installation ID Number: 007-0002
Permit Number:

Mid-America Biofuels, LLC
410 South Jefferson
Mexico, MO 65265

Complete: October 27, 2005
Reviewed: January 5, 2006

Parent Company:
Mid-America Biofuels, LLC
P.O. Box 104778, Emerald Lane
Jefferson City, MO 65110

Audrain County, S28, T51N, R9W

REVIEW SUMMARY

- Mid-America Biofuels, LLC has applied for authority to install a biodiesel production facility.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. The HAP of concern from this process is methanol.
- New Source Performance Standards (NSPS) apply to this installation. Specifically, 40 CFR Part 60 Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels*, applies to the storage tanks. Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, of the New Source Performance Standards (NSPS) applies to the proposed boiler. Subpart NNN, for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations, applies to the biodiesel plant. NSPS Subpart RRR, for VOC Emissions from SOCMI Reactor Processes, applies to the biodiesel plant. In addition, NSPS Subpart VV, for Equipment Leaks of VOC in the SOCMI, applies to the biodiesel plant.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart FFFF, National Emission Standards for Miscellaneous Organic Chemical Production and Processes (MON) applies to the biodiesel plant. In addition, MACT, 40 CFR Part 63, Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters*, applies to the proposed equipment since the installation is major for HAPs.
- A baghouse will be used to control particulate matter emissions from the filter aid handling.

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all criteria air pollutants are below de minimis levels.
- This installation is located in Audrain County, an attainment area for all criteria air pollutants.
- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2], Number 20, *Chemical Process Plants*.
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Emissions testing is required for the source.
- Addition of the equipment in this permit qualifies as an off-permit change to your Part 70 Operating Permit.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Mid-America Biofuels, LLC (MAB) proposes to construct and operate a 36 million gallon per year biodiesel manufacturing plant in Mexico, Missouri. Due to the location of the facility to the existing Archer Daniels Midland Company (ADM) installation and support activities of the existing ADM, it was determined that both companies should be considered a single installation for permitting purposes. Therefore, although the MAB facility is considered a greenfield construction, the existing potential emissions of the ADM facility were used for this permit applicability determination.

Installation is defined by 10 CSR 10-6.020 (2)(I)(7) as the following:

“All source operations including activities that result in fugitive emissions, that belong to the same industrial grouping ..., and any marine vessels while docked at the installation, located on one (1) or more contiguous or adjacent properties and under the control of the same person...”

However, the definition of “support facility” as clarified in the August 7, 1980, preamble to the Prevention of Significant Deterioration (PSD) regulations (45 FR 52695) states:

“Each source is to be classified according to its primary activity, which is determined by its principal product or group of products produced or distributed, or services rendered. Thus, one source classification encompasses both primary and support facilities, even when the latter includes units with a different two-digit SIC code. Support facilities are typically those which convey, store, or

otherwise assist in the production of the principal product. Where a single unit is used to support two otherwise distinct sets of activities, the unit is to be included within the source which relies most heavily on its support...”

Therefore, in defining the source where a potential support relationship exists between two (2) facilities, the difference in SIC codes becomes irrelevant and the only factors remaining to be considered are whether the facilities are contiguous or adjacent and under the control of the same person.

In this case, ADM produces the raw material (i.e. soy bean oil) used to manufacture the product for MAB (i.e. biodiesel). There is a planned business relationship between the two facilities. Therefore, ADM is considered a support facility of MAB. For permitting purposes, ADM and MAB meet the requirements for being and are considered one (1) installation. However, for clarity in this permit, the biodiesel facility will be referred to as MAB and the soybean oil producing facility will be referred to as ADM.

The existing installation is considered a major source for both construction and operating permits. No permits have been issued to Mid-America Biofuels, LLC from the Air Pollution Control Program. However, the following permits have been issued to Archer Daniels Midland Company (ADM) from the Air Pollution Control Program.

Table 1: Permits issued by the Air Pollution Control Program

Permit Number	Description
0284-007	Construction of a boiler
0795-002	Construction of a new soybean dehulling system
OP2000-146	Part 70 Operating Permit

PROJECT DESCRIPTION

Biodiesel is produced from the base-catalyzed transesterification of vegetable oil with methanol. The by-product is glycerine. The primary vegetable oil feedstock will be soybean oil from the ADM facility. However, the plant will be designed to accept vegetable oil from alternative sources when ADM is unable to provide the oil.

Crude soybean oil from the ADM facility will be refined by processing through a filter media, which will be stored in a silo at the ADM facility. The filter media will be transferred pneumatically and emissions will be controlled using a fabric filter with a control efficiency of 99%.

Two reactors will be used to produce the biodiesel. As the methyl esters are separated from the glycerine by-products, the excess methanol will be recovered and recycled back into the process. Emissions from all of the processing equipment will be vented to a single emission point and controlled by a water absorber as required by 40 CFR Part 63, Subpart FFFF.

Biodiesel and crude glycerine will be loaded onto dedicated tank trucks and rail cars for transport off-site.

A 15.33 MMBTU per hour boiler will be installed to provide process heat for biodiesel production and/or soybean processing at the existing ADM plant. The boiler will burn primarily natural gas with No. 2 fuel oil, crude soybean oil, and biodiesel as backup fuels. The worst case emissions from each fuel were determined for the potential emissions of the boiler.

MAB will have paved and unpaved haul roads. However, only the transport of filter aid occurs on the paved haul road. For simplicity, haul road emissions were estimated assuming all truck activity occurred on the unpaved haul road.

EMISSIONS/CONTROLS EVALUATION

The emission factors and control efficiencies used in this analysis were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition. Storage tank emissions were estimated using the EPA TANKS program Version 4.0.9d. Table 2 outlines the new emission points, the maximum hourly design rates (MHDR) and the source of emission factors.

Table 2: Biodiesel Plant Emission Points

Emission Point	Description	MHDR	Emissions Source
EP01	Boiler	15.33 MMBTU	AP-42 Section 1.4 and 1.3
EP02	Biodiesel Process Vent	4110 gallons	Manufacturer's data
EP03	Filter Aid	0.085 tons of filter aid	AP-42 Section 9.9.1
TK01-03	Biodiesel Tank #1-3	450,000 gallon (1) and 100,000 gallon (2) (capacity)	TANKS 4.0.9d
TL04-05	Crude Glycerine Tank #1-2	85,000 gallon (capacity)	TANKS 4.0.9d
TK06	Fatty Acid Tank	20,000 gallon (capacity)	TANKS 4.0.9d
TK07-09	Methanol Tank #1-3	38,000 gallon (capacity)	TANKS 4.0.9d
TK10	Sodium Methylate Tank	20,000 gallon (capacity)	TANKS 4.0.9d
TK11	RB Soy Oil Tank	100,000 gallon (capacity)	TANKS 4.0.9d
TK12	HCl Tank	25,000 gallon (capacity)	TANKS 4.0.9d
TK13	NaOH Tank	10,000 gallon (capacity)	TANKS 4.0.9d
FS01-02	Haul Roads (paved and unpaved)	Varies based on road length (700ft, unpaved; 500ft, paved)	AP-42 Section 13.2.2
FS03	Cooling Tower	210,000 gallons	AP-42 Section 13.4
FS04	Fugitive Leaks	N/A	EPA Protocol for Equipment Leak Emission Estimates
FS05	Biodiesel Loadout	4110 gallons	AP-42 Section 5.2

Emissions from the process vent were determined using data provided by the vendor who estimates emissions at 1.83×10^{-5} pounds of methanol per gallon of biodiesel produced. These emissions will be controlled with a water absorber as required by 40 CFR Part 63, Subpart FFFF. Therefore, no testing requirements are necessary. Cooling tower emissions were calculated assuming that the total dissolved solid content in the cooling tower is 3500 part per million and the drift loss is 0.02 percent.

Existing potential emissions were calculated from the installation's Part 70 Operating Permit. Existing actual emissions were taken from the installation's 2004 Emissions Inventory Questionnaire (EIQ). Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year).

The following table provides an emissions summary for this project.

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2004 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM ₁₀	15.0	490.2	45.50	9.35	N/A
SO _x	40.0	310.8	0.12	3.22	N/A
NO _x	40.0	128.1	20.39	11.95	N/A
VOC	40.0	282.1	161.62	10.62	N/A
CO	100.0	56.7	17.13	5.48	N/A
HAPs**	10.0/25.0	241.9	N/D	9.25	N/A

*N/A = Not Applicable; N/D = Not Determined

**All HAPs emissions are methanol.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of criteria air pollutants are below de minimis levels.

APPLICABLE REQUIREMENTS

Mid-America Biofuels, LLC shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units*, 40 CFR Part 60, Subpart Dc.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Volatile Organic Liquid Storage Vessels*, 40 CFR Part 60, Subpart Kb.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations*, 40 CFR Part 60, Subpart NNN.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for VOC Emissions from SOCMI Reactor Processes*, 40 CFR Part 60, Subpart RRR.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Equipment Leaks of VOC in the SOCMI*, 40 CFR Part 60, Subpart VV.
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Hazardous Air Pollutants for Miscellaneous Organic Chemical Production and Processes*, 40 CFR Part 63, Subpart FFFF.
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters*, 40 CFR Part 63, Subpart DDDDD.
- *Restriction of Emission of Sulfur Compounds*, 10 CSR 10-6.260
- *Maximum Allowable Emissions of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-3.060

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Emily E. Wilbur
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated October 10, 2005, received October 19, 2005, designating Mid-America Biofuels, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Northeast Regional Office Site Survey, dated October 27, 2005.